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APPROVAL REPORT

APPROVAL EXAMINATION OF NEWSON-GALE MODEL X-45 AND X-45IP METALLIC STATIC GROUNDING AND BONDING CLAMPS PER FM APPROVALS DRAFT STANDARD 6085

Prepared for:

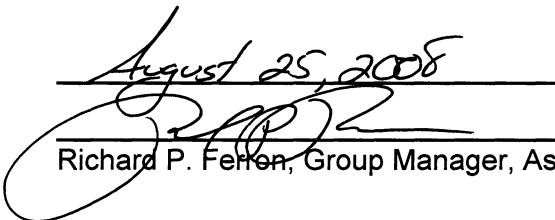
**Newson-Gale Ltd.
Unit 6 Churchill Park
Colwick
Nottingham, England
NG4 2HF**

Project ID: 3031650

Class: 6085

Date of Approval:

Authorized by:

August 25, 2008


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**APPROVAL EXAMINATION OF NEWSON-GALE MODEL X-45 AND X-45IP
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FM APPROVALS DRAFT STANDARD 6085**

from

**Newson-Gale Ltd.
Unit 6 Churchill Park
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NG4 2HF**

I INTRODUCTION

- 1.1 Newson-Gale requested Approval of their Model X-45 and X-45IP Stainless Steel Medium Duty Grounding Clamps. These assemblies are used to provide electrical conductivity between a flammable liquid container and ground to dissipate static electricity which may be generated in the transfer of the flammable liquid. The clamps were supplied with a ¼ in. (6 mm) by 246 in. (6.3 m) plastic covered grounding cable, one end of the cable was connected to the clamp and the opposite end had a crimped eye connector.
- 1.2 The static grounding clamps described within this report are manufactured at Newson-Gale, Ltd., Nottingham, England.
- 1.3 Testing was conducted at FM Approvals test facilities located in Norwood, MA and West Gloucester, RI.
- 1.4 This Report may be reproduced only in its entirety and without modification.
- 1.5 **Standard:**

Title	Class Number	Date
Draft Standard - "Bonding and Grounding Clamps"	6085	March 1991

- 1.6 Examination included Electrical Resistance, Vibration, Mechanical Strength and Clamp Force testing.
- 1.7 Tests show that Newson-Gale Model X-45 and X-45IP Stainless Steel Medium Duty Grounding Clamp assemblies meet the Approval requirements of the **Standard** listed above for Bonding and Grounding Clamp assemblies.
- 1.8 **Listings:** The tested Model X-45 and X-45IP Stainless Steel Medium Duty Grounding Clamp assemblies will be listed in the Approval Guide when Approval is effective.

II DESCRIPTION

- 2.1 The Newson-Gale Model X-45 Stainless Steel Medium Duty grounding clamp is a self-closing, plier type clamp constructed from stamped stainless steel and assembled with a torsion spring. Each handle is approximately 5 in. (120 mm) long with a 3/4 in. (19 mm) handle spread. The handles are held together with a stainless steel rivets. The clamps are provided with replaceable stainless steel tips and stainless steel jaws. One handle of the clamp has a locking plate screw arrangement for securing a Hytrel coated grounding cable.
- 2.2 The Newson-Gale Model X-45IP Stainless Steel Medium Duty grounding clamp is constructed the same as the Model X-45.

III MARKINGS

- 3.1 The manufacturer shall mark each clamp assembly with the manufacturer's name and product trade name. In addition, the clamp assembly must be marked with the Approval Mark of FM Approvals.
- 3.2 Markings denoting Approval by FM Approvals shall be applied by the manufacturer only within and on the premises of manufacturing locations that are under the FM Approvals Facilities and Procedures Audit program.
- 3.3 The manufacturer agrees that use of the FM Approvals name or Approval Mark is subject to the conditions and limitations of the Approval by FM Approvals. Such conditions and limitations must be included in all references to Approval by FM Approvals.

IV EXAMINATION AND TESTS

- 4.1 Newson-Gale, Ltd submitted product samples of their model X-45 Stainless Steel Medium Duty Grounding clamp assembly for examination and testing.
- 4.2 The samples were examined for conformance to the manufacturer's published information and drawings with respect to materials, dimensions, components, markings and workmanship. These examinations indicated the samples were in conformance with the manufacturer's statement and comply with FM Approvals requirements.
- 4.3 Electrical Resistance Test:

A test circuit was used to determine the electrical resistance of a clamp assembly in actual use. An ohmmeter was connected to bare metal and to ground. The circuit was completed by the clamp assembly which connected the bare metal to ground. The grounding clamp assembly test showed less than 1 ohm resistance in the circuit. Contact was positive with no extra manipulating of the clamp necessary to complete the circuit.

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4.3.1 This result met FM Approvals minimum requirement.

4.4 Vibration Test:

The Model X-45 grounding clamp was subjected to 4-hour vibration test of 0.2 in. (0.5mm) displacement with a varying frequency from 10 to 30 cycles per second while attached to a piece of ¼ in. (6 mm) steel plate.

4.4.1 The clamp remained in place during the test, this test is satisfactory.

4.5 Mechanical Strength:

A mechanical strength test was performed using the Tinius-Olsen tensile testing machine, with a pull rate of 0.3 in (7.6 mm) per minute, on various test configurations as shown below.

<u>Clamp Number</u>	<u>Sample Thickness</u>	<u>Max. Force</u>	<u>Average Force</u>
X-45	¼ in. (6 mm) Steel	24.77 lb (16.5 kg)	35.6 lb (16.1 kg)
		40.37 lb (17.6 kg)	
25.91 lb (14.3 kg)			
	0.030 in. (1mm) Steel	25.63 lb (11.65 kg)	26.96 lb (12.25 kg)
		30.62 lb (13.92 kg)	
		24.62 lb (11.19 kg)	

4.5.1 These results meet FM Approvals minimum requirements.

4.6 Clamping Force Tests:

The start-to-open force to actuate the hand clamp was determined to be as follows:

<u>Clamp Number</u>	<u>Opening Force</u>
X-45	14 lb (6.36 kg)

4.6.1 This result met FM Approvals minimum requirement.

V REMARKS

The grounding clamps shall be used only in accordance with the manufacturer's instructions.

VI FACILITIES AND PROCEDURES AUDIT

The Newson-Gale Ltd. production facility is located in Nottingham, England is currently included in FM Approval's Facilities and Procedures Audit program. The addition of the Approved product to this manufacturer's currently Approved line represents no change to the manufacturing or quality control procedures that would require a special audit.

VII MANUFACTURER'S RESPONSIBILITIES

- 7.1 As part of the listing requirements, FM Approvals requires assurance that subsequent units produced will present the same quality and reliability as the specific unit examined. The manufacturer shall maintain a Quality Assurance Program which includes as a minimum: incoming inspection and testing, in-process inspection and testing, final inspection and testing, equipment calibration, and drawing change control. The specific procedures used to control quality are best determined by the manufacturer.
- 7.2 The manufacturer shall notify FM Approvals of any planned change in the Approved products, prior to general sale or distribution, using Form 797, Approved Product Revision Report

VIII DOCUMENTATION

The following drawings describe the subject grounding clamps and are filed under Project ID 3031650.

<u>Drawing No.</u>	<u>Issued</u>	<u>Description</u>
NG-VESX45-IP-FM	June 2008	X45-IP Medium Duty Clamp
NG-VESX45-ATEX	June 2008	X-45 Medium Duty Clamp

IX CONCLUSION


- 9.1 The grounding clamps, as described in Section II, herein, meet draft Standard 6085 Approval requirements.
- 9.2 Since a duly signed Master Agreement is on file for this customer, Approval is effective as of the date of this report.
- 9.3 Continued Approval will depend upon satisfactory field experience and periodic Facilities and Procedures Audits.

EXAMINATION AND TESTING BY: J. A. Nunes
FM Approvals Test Center Personnel

PROJECT DATA RECORD: 3031650

ATTACHMENTS: None

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